Instructions: Write name legibly. Explain so that smart people who have not taken our class will understand.

Explain the difference between experiments of application and experiments of testing (p. 4-5):

Explain the relationship between "reduction to absurdity" and "experiments of testing" (p. 5, 9-11).

Which of Duhem's concepts is most like Hempel's wide inductivist, "method of hypothesis" (TBA8):
  (a) experiments of application   (d) (a) and (b)
  (b) experiments of testing   (e) (b), and (c)
  (c) crucial experiments   (f) (a), (b), and (c)

Indicate whether the following statements are true or false by underlining one or the other option.
True   False   *Duhem thinks that we can falsify or confirm individual hypotheses.*
True   False   *Duhem thinks that proof/disproof in physics is just like proof/disproof in geometry.*

Determine which method(s) of testing occur in the following examples. Check all that apply.
If vaccinations cause autism, then peer-reviewed randomized control trials would reliably find correlations between vaccination and autism diagnoses, controlling for other causally relevant variables. But we don't find such correlations. So vaccinations don't cause autism.
          ☐ Popper's deductivist method   ☐ Hempel's inductivist method   ☐ Duhem's holist method

If lowering taxes raises working-class living standards, then controlled retrospective studies would reliably find negative correlations between tax rates and working-class living standards. But if raising the minimum wage raises working class living standards, then controlled retrospective studies will not reliably find negative correlations between tax rates and working-class living standards. Controlled retrospective studies do not reliably find negative correlations between tax rates and working-class living standards. So perhaps lowering taxes doesn't raise working class living standards, raising the minimum wage does raise working class living standards, and/or some background assumption(s) is/are false. We don't know which.
          ☐ Popper's deductivist method   ☐ Hempel's inductivist method   ☐ Duhem's holist method

If intelligence is at least partially genetic, then twin studies and full-genome analyses would repeatedly find substantial correlations between genetic variables and measures of intelligence, controlling for other causally relevant variables. We do reliably find these correlations. So intelligence is probably at least partly genetic.

☐ Popper's deductivist method   ☐ Hempel's inductivist method   ☐ Duhem's holist method

Complete the logic of the following arguments as if they were crucial experiments:

If light is particles, then green light will be <u>left</u> of the colorless light in the turning mirror experiment.
If light is wave vibration, then green light will be <u>right</u> of the colorless light in the turning mirror experiment.
We observed that the green was <u>right</u> of the colorless light.
So, _____ is false
and _____ is true.

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So, _____ is false
and _____ is true.

In your own words, explain what Duhem means by "crucial experiment" (p. 10-11).

Explain the key difference between crucial experiments and Duhem's (holist) view of experiments.

Complete the following *modus tollens* arguments as Duhem would:
If [various assumptions] and [a scientific hypothesis] is true, then we will observe [some observable outcome].
We did not observe [the observable outcome].
So, _____ is false.

Complete the following modus tollens arguments.
Your phone/computer is unable to connect to the WiFi (even though it accepts your Wifi password).
If the problem is that you are too far from the router, then standing next to the router will fix it.
If the problem is that the router lost connection to the internet, then standing next to the router will not fix it..
Standing next to the router did not fix it.
So, the problem is not _____.

Your phone/computer is still not on WiFi (but it accepts your password and you're standing next to the router).
If the problem is that the router lost connection to the internet, then rebooting the router will fix it.
If the problem is distortion from surrounding WiFi networks, then rebooting the router will not fix it.
Rebooting the router did not fix it.
So, the problem is not _____.

Your phone/computer is still not on WiFi (but it accepts your password, you're standing next to the router, etc.)
If the problem is distortion from surrounding WiFi networks, then changing the router's WiFi channels will fix it.
If the problem is with your phone/computer, then changing the router's WiFi channels will not fix it.
We observed that changing the router's WiFi channels did not fix it.
So, the problem is not _____.

Your phone/computer is still not on WiFi (but it accepts your password, you're standing next to the router, etc.)
If the problem is with your ISP, then calling your ISP to have them reset your signal will fix it.
If the problem is your phone, then calling your ISP to have them reset your signal will will not fix it.
Calling your ISP to have them reset your signal fixed it.
So, the problem was not _____.

Did you just test isolated hypotheses about WiFi? What does that mean for Duhem's thesis? Explain.

In your own words, explain what we cannot infer with Duhem's holist method of testing (see Duhem's title).

Explain the key difference between Popper's deductivist and Hempel's inductivist method of testing.

Explain the key difference between Popper's/Hempel's methods and Duhem's holist method of testing.